FirstNet promises 'profound change' for EMS, official says
 Urgent Communications By Donny Jackson

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High-speed connectivity via FirstNet will let emergency-medical-service (EMS) personnel access and deliver information in a manner timely enough to save lives more often than today, FirstNet board member and EMS practitioner Kevin McGinnis said during a recent webinar on the subject.

"FirstNet is going to make a profound change in the way that EMS is practiced in the field," McGinnis said during the webinar presented by the National Highway Traffic Safety Administration (NHTSA) office of EMS. "It's going to allow us to make better decisions with more and better information at our fingertips in real time. I predict that EMS—over fire and law enforcement—will be the biggest user of FirstNet in the coming years."

Ambulance service transformed from a "horizontal taxi-cab service" to a mobile medical service in the early 1970s and has continued to evolve with the introduction of greater on-scene capabilities as decades have passed, but communications in the sector have not advanced, McGinnis said.

"One thing that has not changed since modern EMS was born is the way we communicate," he said. "The same land-mobile-radio [LMR] systems that we used in the early 1970s are the ones we're using today.

"By and large, those narrowband systems are not going to support us into the future."

What EMS personnel need is reliable, high-speed connectivity that can support real-time multimedia communications, from database queries of a patient's medical history to the delivery of vital-signs information or a video chat between a patient and a doctor at a remote location, McGinnis said. Currently, much of this information is available, but trying to share it via voice communications—the primary capability of LMR—is not efficient, he said.

"Voice communications need to be treated as what they are, which is a bottleneck, not facilitation," McGinnis said. "The ability for a busy paramedic in the field to talk to a busy emergency-room doctor ... about a patient and what needs to be done—that's a window of time that doesn't happen as easily as it used to.

"So, it's important that we [EMS personnel] are able to take data that we have at our fingertips, push it out and park it in the database. When a doctor is available, [the doctor] can pull the information from that database, consume it and push it out to me, the paramedic in the field. When I have spare moment, I can access the database and pull the information back."

Providing EMS personnel access to relevant information as quickly as possible is critical, because a patient with a potentially fatal injury may not have much time to receive life-saving treatment, McGinnis said, noting that the so-called "Golden Hour" may not always be 60 minutes.

"In time-dependent conditions like trauma, we don't have a lot of time," McGinnis said. "It's probably not two minutes, and it's probably not two hours; it's somewhere in between.

"What we do know is that, in the event of a car crash, we probably don't have 20 minutes for that car crash to be discovered, reported and for the 911 system to be activated in a rural area; another 20 or 30 minutes for me to get into my ambulance, get out to the scene and then discover that the patient really is going to die, if we don't do something. [We don't have] 50 minutes to get the helicopter up, out and to the scene; and then 40 minutes to the trauma center. That's time you probably just don't have."

One way to save time is by having an automatic crash notification alert from OnStar or another telemetry
system be sent directly to the 911 system with all relevant data immediately, McGinnis said.

"When a call comes in, within a minute—not 20 minutes—we know we have a crash," he said. "We know where it is. We know how bad it is, we know what kind of force was acted on the car and the likely conditions of the patients. That could save us 20 minutes."

Advanced crash-notification systems also can calculate a likelihood of serious injury to the passengers of a vehicle, McGinnis said. Emergency-response entities leverage this information by establishing policies that dictate when helicopter or extrication services should be placed on alert or deployed automatically when a crash occurs, he said.

"Now, we don't have to wait for [EMS] to get to the scene to determine that it's a bad one, and we've just saved 20 minutes, 40 minutes or an hour in that time-dependent condition," McGinnis said. "But the ability to get the data from that car, send it to a processing point and get it onto my smart phone requires a fairly large data pipe."

In addition, the data throughput via FirstNet could let EMS better understand the surrounding situation, such as where other first-responder entities are deployed at the scene and when other resources may arrive, McGinnis said. Today, such information is provided to EMS personnel only after being at a scene for some time, if it is available at all, he said.

Greater data throughput is also useful when EMS personnel as they work on scene, McGinnis said. They can transmit data from health-monitoring devices on a patient to hospital doctors, dictate voice-to-text notes into medical databases and even establish video chats between the patient and a doctor at a remote location. This information can improve care provided both at the crash site and when a patient arrives at a trauma center, he said.

To ensure that FirstNet designs its system to meet the needs of EMS, representatives of the sector should provide input to the single points of contacts (SPOCs) in each state and territory, according to Amanda Hilliard, FirstNet's director of outreach. Hilliard also reiterated FirstNet's plan to release its draft request for proposal (RFP) "in the near future" and outlined the ongoing state-consultation process.

One webinar asked about the projected fees that EMS would have to pay to access FirstNet. Hilliard noted that FirstNet officials anticipate selling unused capacity on the system to secondary users in an effort to lower end-user fees associated with the service. McGinnis acknowledged that finding money to pay for broadband access can be difficult for EMS, but he believes it can be done, if FirstNet delivers the network that public safety needs.

"Show me an ambulance that doesn't have a cell phone in it; they are few and far between,"

McGinnis said. "The decision that's going to have to be made down the road by that EMS chief is whether to keep the smart phones they've got now or adopt a FirstNet device. The FirstNet board and staff know that's got to be an economical decision.

"That's certainly driving our work. We will be successful only if we can offer something that offers value, something that offers capabilities that don't now exist—and we know that will be the case—and is also economical. That's the challenge for us."

In addition, the FirstNet system must provide the highest levels of cybersecurity, McGinnis said.

"We anticipate that the FirstNet network will probably be one of the prime targets of communications hackers and others that would want to bring the system down, because of the people that it's serving—public safety," McGinnis said. "So, cybersecurity is absolutely Job 1as far as the network's capabilities are concerned, and they far, far outstrip any requirements that HIPAA [the Health Insurance Portability and Accountability Act] may have or that patients would want to make sure that the system has."

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